Time:2 $\frac{1}{2}$ Hr

Marks:75

Note:

1. All questions are compulsory.
2. Attempt any three sub questions from each question
3. Figure to right indicates marks.
4. Use of calculator is allowed.
5. Graph paper will be provided on request.

Q1.   **Attempt any 3 from the following.**

1.   Define the following terms with an example.   (6)
   (i)   Variate
   (ii)   Attributes
   (iii)   Statistics

2.   For the following data, find the cumulative frequencies of (i)   (7)
   Less than type (ii) greater than or equal to type. Hence answer
   the following questions
   a.   How many employees have their salary less than 500
      rupees?
   b.   How many employees earn greater than or equal to 600
      rupees?
   c.   How many employees earn between 500 and 800?

Monthly salary (rupees)	No. of employees
300-400	12
400-500	18
500-600	27
600-700	20
700-800	17
800-900	06

3.   The number of workers in a large factory in 1966 was 540 of   (7)
   which 30% were females and the rest males. In 1971, the
   strength of the workers increased by 100 females and 200
   males. In 1976, the total number of workers had increased by
   25% over its value in 1971 while the increase in the number of
   male workers was 16 more than the increase in the number of
   female workers.

4. What is secondary data. Mention any two source of secondary data. **(6)**

Q2.   **Attempt any 3 from the following**

1. Draw less than and greater than type ogive for following data about time to assemble certain apparatus : **(7)**

Time (min) :	15-20	20-25	25-30	30-35	35-40
No. of workers :	14	25	30	25	16

2. The following data give marks obtained by 25 students in a test in mathematics (x) and statistics (y) : **(7)**

(30,10) (20,25) (25,25) (20,15) (15,30) (10,20)
(18,12) (16,16) (28,29) (29,25) (12,22) (19,23)
(19,25) (26,14) (27,15) (14,14) (30,22) (26,24)
(20,15) (17,28) (18,19) (25,30) (32,18) (13,34)
(18,33)

Taking class intervals for x and y as 10-15, 15-20, ...prepare

(i)   A bivariate frequency table
(ii)   Marginal frequency tables for x and y
(iii) Conditional frequency distribution of x given $y \geq 25$.

3. For the data given below, draw the histogram and frequency polygon : **(6)**

Class interval :	5-10	10-15	15-20	20-25	25-30	30-35
Frequency :	4	8	12	17	7	2

4. Draw a multiple bar diagram to represent the following data (6) relating to the index of industrial production in U.S.A. and West Germany for the years 1956-1959.

Year	Index of Industrial Production	
	U.S.A.	West Germany
1956	109	139
1957	110	147
1958	102	152
1959	116	162

Q3. **Attempt any 3 from the following**

1. Define the following terms with an example. (6)

  (i)   Quartiles
  (ii) Deciles
  (iii) Percentiles.

2. A time and motion study of a certain operation shows the (7) following distribution of 100 workers. Calculate median and mode of the distribution.

Time(min):	10-15	15-20	20-25	25-30	30-35
No. of workers :	8	14	18	25	15

	35-40	40-45
	14	6

3. In health club there are 100 members 50 men, 40 woman and (7) 10 children.
It was observed that the average weight of men, woman and children are 60 Kg. 40 Kg. and 32 Kg respectively. Find the combined average weight of all the members of the club.

4. Compare mean, Median, Mode and state which is the best? (6)

Q4. **Attempt any 3 from the following**

1. What are the requirements of a good measure of Central Tendency. (5)

2. Find the Harmonic Mean for the following data : (5)

    X :   25.3   28.7   30.0   32.9

3. Find the combined mean of the following data : (5)
    Mean wages of first group = 210
    Mean wages of second group = 150
    No. of wages of first group =150,
    No. of wages of second group =100

4. Draw a pie-diagram to represent the following data of investment pattern in third five year plan. (5)

    Agriculture and community development   14%
    Irrigation and power   16%
    Small and organized industries and minerals   9%
    Transport and communications   17%
    Social service and miscellaneous   16%
    Inventories   8%